

REMARKS/ARGUMENTS

In view of the foregoing amendments and following remarks, favorable reconsideration of the pending claims is respectfully requested.

Status of the Claims

Claims 1, 3-5, 7-12, and 16-22 are pending.

The subject matter of initial claim 1 has been limited to a liquid food product containing particles of dehydrated lactic acid bacteria chosen from lactobacilli and bifidobacteria coated with at least one vegetable fat that is solid at ambient temperature, wherein said coated particles of lactic acid bacteria are in the form of granules having an average size of less than 200 μm , wherein said vegetable fats are chosen from hydrogenated and nonhydrogenated, fractionated or unfractionated, esterified or nonesterified substances, food waxes, fatty acids, palm oils with an Mp of 45°C and 58°C, cocoa butter, peanut butter, palm kernel oil, carnauba wax with an Mp = 80-85°C, microcrystalline wax of petroleum origin, palmitic acid, and mixtures thereof, said vegetable fats having a melting point above 40°C, and wherein said granules contain lactic acid bacteria in an amount greater than or equal to 1×10^{10} CFU per gram of granules, said granules are free of starch, and said food product has a pH of less than or equal to 4.5 and a water content by weight of at least 90%.

This amendment finds support in claim 20, which is cancelled.

Claims 3, 21, and 22 have been amended to replace the expression "granules of dehydrated lactic acid bacteria" with "said granules", which obviously refer to granules described in claim 1.

Rejections under 35 USC § 112

Claim 8 has been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. It is respectfully submitted that the microorganism in question has been deposited under the Budapest treaty. In this regard, please find attached a statement by Applicants' representative, Timothy Balts, showing that the deposits fully meet the requirements of 37 CFR §§ 1.806-808. In view of this statement, it is respectfully submitted that this rejection has been overcome.

Claims 2-3 and 21-22 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. It is respectfully submitted that the amendments to Claims 3, 21, and 22 overcome this rejection.

Prior Art Rejections

Claims 1, 3-5, 7-12, and 16-22 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,292,657 to Rutherford et al. (hereinafter R1). in view of U.S. Patent No. 6,447,823 to Shin et al. (hereinafter R2). and EP 09040784 to Van Hoey-De-Boer et al. (hereinafter R3).

Briefly, the technical problem addressed by the present invention is the preparation of a liquid aqueous food product containing viable probiotic microorganisms encapsulated in granules that are not perceptible in the mouth when drinking said liquid food product; more specifically, the purpose is thus to maintain said microorganisms viable in a low pH (4.5 or less) and highly aqueous (water content of at least 90%) environment.

This technical problem has been solved by the encapsulation of dried microorganisms with vegetable fats that is solid at ambient temperature in such a way that the granules of encapsulated microorganism have an average size of less than 200 μm . The small granules size is crucial for purposes of distribution/dispersion stability in liquid food products and taste effect (to avoid perception of the granules when consuming the liquid food product). The claimed solution to the above-described technical problem is not disclosed or suggested by R1, whether considered individually or in combination with any one of R2 and R3.

As already mentioned, the purpose of R1 (US 5,292,657) is the preparation of freeze-dried microorganisms entrapped in a fatty acid matrix capable of maintaining bacterial activity in acidic environment; the entrapped freeze-dried microorganisms are obtained with very specific equipment.

As R1 uses a particular process (different from the method used for preparing granules according to the present invention), the granules according to R1 are such that microorganisms are mixed and entrapped into the fatty acid matrix whereas particles of microorganisms of the present invention are coated with vegetable fat solid at ambient temperature.

R1 does not describe bacteria capsules having exclusively an average size of less than

200 μm .

Furthermore, R1 does not describe how to formulate said capsules in liquid food products; microspheres of R1 may only be mixed in a dry feed product.

Because granules of R1 are essentially composed of fats and thus very lipophilic, a person skilled in the art would have been deterred from using such granules in liquid aqueous food product.

Based on the teaching of R1, a person skilled in the art would not have used capsules according to R1 to prepare liquid food product containing at least 90% of water and probiotic microorganisms, such granules being not perceptible in the mouth.

Furthermore, the preparation of a dispersion of microspheres in a liquid food product and the taste of these microspheres are not problems that need to be addressed in R1; for this additional reason, the teaching of R1 is not relevant for the person skilled in the art.

On the other hand, none of the cited prior art suggests the preparation of granules having the structure (small size) and composition according to claim 1 or their use in liquid aqueous food product having a content of water of at least 90%:

R2 (US 6,447,823) describes a yoghurt containing lactic acid bacteria encapsulated using a mixture of hardened oil and of starch; the size of the capsules thus obtained is larger (1 to 3 mm) than granules of the present invention. Yogurts are textured food products containing less than 90% of water (see page 8, line 19 of the PCT application as published or page 10, line 22 of the English translation of said PCT application we provide you with); because of this semi-solid texture, granules are less perceptible in yogurt than in aqueous liquid food product.

R3 (EP 0 904 784) describes nutritional preparation containing probiotic microorganisms such as food supplement which can be mixed with beverage just before drinking. R3 does not address the problem of conservation of viable microorganisms in a low pH (4.5 or less) and highly aqueous (water content of at least 90%) environment nor avoiding the perception of said microorganism for organoleptic purposes.

Even by combining the knowledge of R1 to R2 and/or R3, a person skilled in the art would not have prepared a liquid food product containing granules of probiotic microorganisms that are not perceptible in the mouth.

Compared to prior art, the combination of technical features of the food product according to claim 1 leads surprisingly to:

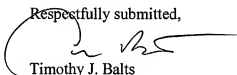
- a very good viability of the microorganisms as shown in the experimental examples of the present Application;
- a very good dispersion and physical stability of the lipophilic granules in the essentially aqueous food product; and
- a very good organoleptic quality of the liquid food product: granules are not perceptible in the mouth when mixed with a liquid food product (feeling of grains of sand on the palate).

Given the above, the liquid food product of claim 1, and any claims dependent thereon, is not obvious in view of the teaching of R1 to R3.

In view of the foregoing amendments and remarks, it is respectfully submitted that the rejections under 35 U.S.C. § 103(a) and 112 have been overcome, and that the claims are in condition for allowance.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any required fee (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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